



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/721,638	11/24/2003	Bunya Sato	09792909-5715	7696

26263 7590 01/26/2007  
SONNENSCHEIN NATH & ROSENTHAL LLP  
P.O. BOX 061080  
WACKER DRIVE STATION, SEARS TOWER  
CHICAGO, IL 60606-1080

EXAMINER
----------

KITOV, ZEEV V

ART UNIT	PAPER NUMBER
----------	--------------

2836

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/26/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/721,638	SATO, BUNYA	
	<b>Examiner</b>	<b>Art Unit</b>	
	Zeev Kitov	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on 05 December 2006.
- 2a) This action is FINAL.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 4 - 8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 4 - 8 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) Notice of Informal Patent Application
- 6) Other: \_\_\_\_\_.

## DETAILED ACTION

Examiner acknowledges a submission of the amendment and arguments filed on November 7, 2006. Claim 1 is amended. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 4 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. A reason for that is in a following claim limitation: "shut-off-holding means comprising a resistor block of resistance larger than 1 kohm and smaller than 200 kohms". The Specification though reciting the claim language does not provide sufficient explanation to the functioning of the "shut-off-holding means". It recites [0049]: the "shut-off-holding means" for shutting off abnormal discharge, and [0050]: the "shut-off-holding means" releases the discharge shutoff. No further details are provided. It is not clear, how simple block of resistors connected to the battery terminals can be able to fulfill such set of functions. Particularly, it is not clear how the "shut-off-holding means" (resistor 31 in Fig. 1) can affect the protection control circuitry to maintain the shut-off state (Claim 4,

lines 11 – 12) when according to Specification [0090] in the shut-off state the switch 13 is OFF (disconnected), and therefore the resistor 31 is disconnected from the battery and cannot affect the voltage detected by the detector 32. Having such limitation in the claim, one of ordinary skill in the art would not be able to reproduce and practice the invention according to Claim 4. For purpose of examination, the “shut-off-holding means” of the claim is interpreted as a resistor connected to the battery terminals and the sentence: “such discharge shut-off is maintained by the shut-off holding means” is not given patentable weight.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art (AAPA) in view of Lieser (US 3,480,940). AAPA discloses following elements of the claim: a battery pack including a battery cell and a protection circuit for shutting off overcurrent discharge, wherein the protection circuit including: a detector (18 in Fig. 29) for detecting voltage between an external plus terminal and the external minus terminal; wherein the load is inherently connected to the external plus terminal and the external minus terminal of the battery ([0018]), wherein abnormal discharge by shorting or connecting a low resistance between the external plus terminal and the

external minus terminal of the battery pack is shut off ([0021] – [0025]), and the discharge shut-off is released to recover discharge upon detecting by the detector (18 in Fig. 29) a presence of a predetermined voltage between the external plus terminal and the external minus terminal of the battery pack ([0020]). However, it does not disclose the shut-off-holding means, i.e. a resistor block. Lieser discloses the batteries (30 in Fig. 1) provided with resistors (34 in Fig. 1) connected to the battery terminals. The reference has the same problem solving area, namely providing controllable charge and discharge of the batteries. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the AAPA solution by adding the resistor block connected to the battery terminals according to teachings of Lieser, because as Lieser states (col.2, lines 65 – 70), the resistors (28 and 34) set the charge and discharge rate of the batteries to keep the batteries voltage above predetermined minimum value. Additionally, such resistor block is necessary to prevent a load dump effect when upon disconnection of the battery in the car the voltage may jump up to a dangerous level. The battery control unit and switches 13 and 15 would not help in such case. As to the value of resistive block, according to AAPA ([0026]), a condition to recover from shut-off is that the resistance externally connected to external terminals of the battery pack is larger than 100 kohm.

Regarding Claim 5, AAPA discloses the detector (18 in Fig. 29) as voltage detector ([0018]).

Regarding Claim 7, AAPA discloses the discharge shut-off is made by a discharging control switch (13 in Fig. 29) connected between the battery cell negative terminal and the external minus terminal.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over (AAPA) in view of Lieser and Fasen et al. (US 4,767,977). Claim 6 differs from Claim 4 rejected above by its limitation of the detector being connected to a differentiation circuit. Fasen et al. disclose the detector (a voltage drop across resistor 64 in Fig. 1) being connected to the fast charge control circuit (37, 41, 43, 39, 45, 47 in Fig. 1) implementing slope detection, which is in fact the differentiating function. The reference has the same problem solving area, namely providing the battery charge/discharge control circuit. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the AAPA solution by adding the slope detection (differentiating) circuit according to teachings of Fasen et al. because as Fasen et al. state (col. 1, lines 13 – 23), after battery is fully charged the charging current is to be terminated to avoid heat build-up, which is dangerous to the battery.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over (AAPA) in view of Lieser and Mukainakano (US 6,403,261). Regarding Claim 8, Mukainakano discloses in figure 1, wherein the discharge shut-off by the shut-off holding means is made by a discharging control switch connected between the battery cell positive terminal and the external plus terminal (col. 3, lines 32 - 38). The reference has the

same problem solving area, namely providing the battery charge/discharge control system. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the AAPA solution by changing position of the discharge control switch from negative pole of the battery to the positive pole of the battery according to teachings of Mukainakano, since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950). According to Mukainakano (col. 7, lines 46 – 55), the upgraded circuit operates absolutely similarly to the previous version of the circuit. Since there is no advantage achieved by rearranging the parts, it is routine task of the designer to choose a particular location for the disconnecting switch.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zeev Kitov whose current telephone number is (571) 272 - 2052. The examiner can normally be reached on 8:00 – 4:30. If attempts to reach examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on (571) 272 – 2800, Ext. 36. The fax phone number for organization where this application or proceedings is assigned is (571) 273-8300 for all communications.

Z.K.  
1/19/2007



BRIAN SIRCUS  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800